

**PATENT**

App. Ser. No.: 09/917,958

Atty. Dkt. No. ROC920010091US1

PS Ref. No.: IBMK10091

**LISTING OF THE CLAIMS:**

1. (Previously Presented) A method of displaying an optimized version of source code, the method comprising:

generating, from optimized object code, the optimized version of source code, wherein the optimized version of source code corresponds to an original version of the source code, modified to reflect an optimization in the optimized object code; and

displaying the optimized version of source code on an output device to visually distinguish changes to the original version of the source code in accordance to a compiler optimization, relative to the optimized version.

2. (Previously Presented) The method of claim 1 wherein the generating is performed in response to a request containing a type of a compiler optimization to be used by a compiler program when compiling the original source code.

3. (Previously Presented) The method of claim 1 wherein the optimized source code comprises a decompiled version of the optimized object code, generated from the original source code.

4. (Original) The method of claim 1 wherein the original source code is compiled according to a compiler optimization comprising at least one of an inlining optimization, a common subexpression elimination, a loop invariant code removal, and a dead code elimination.

5. (Original) The method of claim 4 wherein displaying comprises:  
displaying a number of times a procedure call in the original source code is inlined.

**PATENT**

App. Ser. No.: 09/917,958

Atty. Dkt. No. ROC920010091US1

PS Ref. No.: IBMK10091

6. (Previously Presented) The method of claim 1 wherein the optimized object code comprises bytecode generated using a Java compiler.
7. (Previously Presented) The method of claim 6 further comprising:  
displaying a number of times a procedure in the original source code is executed by an interpreter of a virtual machine program before being compiled by a run-time compiler of the virtual machine program.
8. (Original) The method of claim 1 wherein the optimized source code and the original source code are simultaneously displayed in separate windows of a user interface on the output device.
9. (Previously Presented) The method of claim 1 wherein displaying comprises:  
identifying a difference between the original source code and the optimized source code, where the difference is due to the compiler optimization used by a compiler program when compiling the original source code to generate the optimized object code; and  
highlighting the differences on a user interface on the output device.
10. (Original) The method of claim 1 wherein displaying comprises:  
identifying a failed optimization on the original source code;  
determining a reason for the failed optimization from a compiler used to optimize the source code; and  
displaying the reason for the failed optimization.
11. (Original) The method of claim 10 wherein the identifying is performed in response to a user query.
12. (Previously Presented) A method of displaying compiler optimized source code, comprising:

Page 6

401138\_1

**PATENT**

App. Ser. No.: 09/917,958  
Atty. Dkt. No. ROC920010091US1  
PS Ref. No.: IBMK10091

generating an object code from an original version of source code;

optimizing the object code to produce an optimized object code;

decompiling the optimized object code to produce an optimized version of the source code, wherein the optimized version of source code corresponds to an original version of the source code, modified to reflect an optimization in the optimized object code; and

simultaneously displaying the optimized source code and the original source code in separate windows of a user interface on an output device to visually indicate a change to the original source code as a result of the optimizing.

13. (Original) The method of claim 12 wherein generating is performed in response to a request containing a type of a compiler optimization to be applied on the original source code to generate the optimized source code.

14. (Original) The method of claim 12 wherein the original source code is compiled according to a compiler optimization comprising at least one of an inlining optimization, a common subexpression elimination, a loop invariant code removal, and a dead code elimination.

15. (Original) The method of claim 12 wherein simultaneously displaying comprises:

identifying a difference between the original source code and the optimized source code, where the difference is due to the compiler optimization on the original source code; and

highlighting the differences on a user interface on the output device.

16. (Previously Presented) An apparatus for displaying an optimized version of source code, the apparatus comprising:

a memory for storing a program editor, a compiler program and a decompiler program;

Page 7

401138\_1

**PATENT**

App. Ser. No.: 09/917,958

Atty. Dkt. No. ROC920010091US1

PS Ref. No.: IBMK10091

an output device for displaying the optimized version of source code; and  
a processor, for executing the program editor, the compiler program and the decompiler program, the processor being configured to:

generate, from optimized object code, the optimized version of source code, wherein the optimized version of source code corresponds to an original version of the source code, modified to reflect an optimization in the optimized object code, and

provide, to the output device, the optimized version of the source code to visually distinguish changes to the original version of the source code in accordance to a compiler optimization, relative to the optimized version.

17. (Previously Presented) The apparatus of claim 16 wherein the source code version of optimized object code is generated in response to a request containing a type of a compiler optimization to be used by the compiler program when compiling the original version of the source code.

18. (Previously Presented) The apparatus of claim 16 wherein the compiler program is used to compile the original version of the source code in accordance with a compiler optimization comprising at least one of an inlining optimization, a common subexpression elimination, a loop invariant code removal, and a dead code elimination.

19. (Previously Presented) The apparatus of claim 16 wherein the processor is further configured to:

identify a difference between the original source code and the optimized source code, where the difference is due to the compiler optimization used by a compiler program when compiling the original source code; and

highlight the differences on a user interface on the output device.

**PATENT**

App. Ser. No.: 09/917,958  
Atty. Dkt. No. ROC920010091US1  
PS Ref. No.: IBMK10091

20. (Previously Presented) A computer readable medium storing a software program that, when executed by a processor of a computer, causes the computer to perform operations comprising:

generating, from optimized object code, optimized version of source code, wherein the optimized version of source code corresponds to an original version of the source code, modified to reflect an optimization in the optimized object code; and

displaying the optimized version of source code on an output device to visually distinguish changes to the original version of the source code in accordance to a compiler optimization, relative to the optimized version.

21. (Original) The computer readable medium of claim 20 wherein the compiler is configured to perform only the compiler optimization selected by a user.

22. (Previously Presented) The computer readable medium of claim 20 wherein generating is performed in response to a request containing a type of the compiler optimization to be used by a compiler program when compiling the original source code.

23. (Previously Presented) The computer readable medium of claim 20 wherein the optimized source code comprises a decompiled version of the optimized object code, generated from the original source code.

24. (Original) The computer readable medium of claim 20 wherein the original source code is compiled according to a compiler optimization comprising at least one of an inlining optimization, a common subexpression elimination, a loop invariant code removal, and a dead code elimination.

25. (Original) The computer readable medium of claim 24 wherein displaying comprises:

displaying a number of times a procedure call in the original source code is inlined.

Page 9

401138\_1

**PATENT**

App. Ser. No.: 09/917,958  
Atty. Dkt. No. ROC920010091US1  
PS Ref. No.: IBMK10091

26. (Previously Presented) The computer readable medium of claim 20 wherein the optimized object code comprises bytecode generated using a Java compiler.

27. (Previously Presented) The computer readable medium of claim 26 further comprising:

displaying a number of times a procedure in the original source code is executed by an interpreter of a virtual machine program before being compiled by a run-time compiler of the virtual machine program.

28. (Original) The computer readable medium of claim 20 wherein the optimized source code and the original source code are simultaneously displayed in separate windows of a user interface on the output device.

29. (Previously Presented) The computer readable medium of claim 20 wherein displaying comprises:

identifying a difference between the original source code and the optimized source code, where the difference is due to the compiler optimization used by a compiler program when compiling the original source code to generate the optimized object code; and

highlighting the differences on a user interface on the output device

30. (Original) The computer readable medium of claim 20 wherein displaying comprises:

identifying a failed optimization on the original source code;  
determining a reason for the failed optimization from a compiler used to optimize the source code; and  
displaying the reason for the failed optimization.

**PATENT**

App. Ser. No.: 09/917,958  
Atty. Dkt. No. ROC920010091US1  
PS Ref. No.: IBMK10091

31. (Original) The computer readable medium of claim 20 wherein the identifying is performed in response to a user query.

32. (Previously Presented) A computer readable medium storing a software program that, when executed by a processor of a computer, causes the computer to perform operations comprising:

generating an object code from an original source code using a compiler;

optimizing the object code to produce an optimized object code;

decompiling the optimized object code to produce an optimized source code corresponding to the original version of the source code; and

simultaneously displaying the optimized source code and the original source code in separate windows of a user interface on an output device to visually indicate a change to the original source code as a result of the optimizing.

33. (Original) The computer readable medium of claim 32 wherein the compiler is configured to perform only the compiler optimization selected by a user.

34. (Original) The computer readable medium of claim 32 wherein generating is performed in response to a request containing a type of a compiler optimization to be applied on the original source code to generate the optimized source code.

35. (Original) The computer readable medium of claim 32 wherein the original source code is compiled according to a compiler optimization comprising at least one of an inlining optimization, a common subexpression elimination, a loop invariant code removal, and a dead code elimination.

36. (Original) The computer readable medium of claim 32 wherein simultaneously displaying comprises:

**PATENT**

App. Ser. No.: 09/917,958

Atty. Dkt. No. ROC920010091US1

PS Ref. No.: IBMK10091

identifying a difference between the original source code and the optimized source code, where the difference is due to the compiler optimization on the original source code; and

highlighting the differences on a user interface on the output device.